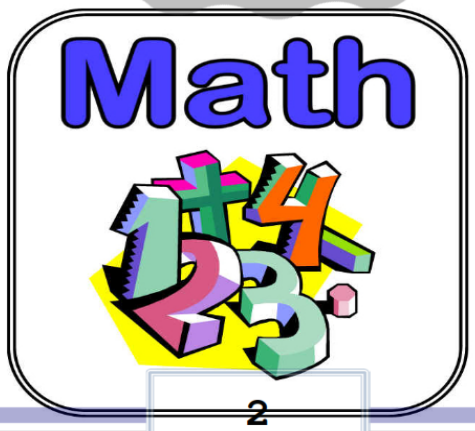
Ahmed Abd.Elwarith
Math EXPERT

أحمد عبدالوارث
خبير رياضيات لغات

01062555317

Sheets for Home Work



Sheet 1

To	
Lesson	1
Unit	1

Answer the following questions :

1 Complete the following :

(1) $\sqrt[3]{x^3} =$ .....

(2) $\sqrt[3]{64} = \sqrt{\quad\quad}$ .....

(3) $\sqrt[3]{0.08 \times 0.1} =$ .....

(4) $\sqrt[3]{-125} + \sqrt{25} =$ .....

(5) The solution set of the equation : $x^3 - 1 = 7$ in $\mathbb{Q}$ is .....

(6) $\sqrt[3]{3\frac{3}{8}} - \sqrt{\frac{1}{4}} =$ .....

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2 Choose the correct answer from the given ones :

(1) The solution set of the equation : $x^3 + 27 = 0$ in $\mathbb{Q}$ is .....

(a) $\{3\}$ (b) $\{-3\}$ (c) $\{27\}$ (d) $\{-27\}$

(2) If $\sqrt[3]{x} = \frac{1}{4}$, then $x =$ .....

(a) $\frac{1}{2}$ (b) $\frac{1}{16}$ (c) $\frac{1}{12}$ (d) $\frac{1}{64}$

(3) The diameter length of the sphere whose volume = $36\ \pi$ cm^3 is ..... cm.

(The volume of the sphere = $\frac{4}{3}\ \pi\ r^3$)

(a) 3 (b) 6 (c) 9 (d) 27

(4) $\sqrt[3]{-8} + \sqrt{2\frac{1}{4}} + \sqrt[3]{0.125} =$ .....

(a) 1 (b) zero (c) -1 (d) $\frac{3}{2}$

(5) The cube whose volume is 64 cm^3 , the length of its edge = ... cm.

(a) 8 (b) 4 (c) 32 (d) 16

(6) $\sqrt[3]{0.027} + |-0.3| =$ .....

(a) zero (b) 0.6 (c) $\frac{3}{10}$ (d) 0.9

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3 Find the solution set of each of the following equations in $\mathbb{Q}$:

(1) $2x^3 - 1 = 53$ (2) $(5x - 3)^3 = 8$

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4 A cubic vessel has a capacity 8 litres. Calculate the length of its inner edge in cm.

Sheet 2

To	
Lesson	2
Unit	1

Answer the following questions :

1 Complete the following :

(1) The two consecutive integers which include the number $\sqrt{5}$ between them are ..... and .....

(2) The value of $\sqrt[3]{13}$ to the nearest one decimal = ...

(3) $\sqrt[3]{x^6} = \sqrt{\text{.....}}$

(4) The solution set in $\mathbb{Q}$ of the equation : $5x^2 = 20$ is .....

(5) If $x \in \mathbb{Z}$ and $x < \sqrt[3]{29} < x + 1$, then x = ...

(6) If $x = \sqrt{3}$, then x^2 = ...

---

2 Choose the correct answer from the given ones :

(1) $\sqrt[3]{9}$ ..... $\sqrt{4}$

(a) < (b) > (c) = (d) ≤

(2) The irrational number between 3 and 4 is .....

(a) 3.6 (b) $\sqrt{6}$ (c) $\sqrt{15}$ (d) $\sqrt{17}$

(3) The square whose side length is $\sqrt{7}$ cm. , its area = ... cm^2

(a) 28 (b) 49 (c) 7 (d) 14

(4) $|\sqrt[3]{-125}| = \sqrt{\text{.....}}$

(a) 25 (b) – 25 (c) 5 (d) – 5

(5) If $x \in \mathbb{Z}$ and $x < \sqrt{11} < x + 1$, then x = ...

(a) 3 (b) 2 (c) 4 (d) 10

(6) The closest integer to the number $\sqrt[3]{26}$ is .....

(a) 5 (b) 3 (c) 2 (d) 13

---

3 [a] Prove that : $\sqrt{5}$ is included between 2.2 and 2.3

[b] Find : the value of x if $0.001\,x^3 = 8$ and show if $x \in \mathbb{Q}$ or $x \in \mathbb{Q}'$

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4 Determine the point which represents the number $1 + \sqrt{3}$ on the number line.

Sheet 3

To	
Lesson	3
Unit	1

Answer the following questions :

1 Complete the following :

(1) $\mathbb{Q} \cap \grave{\mathbb{Q}}$ = ...

(2) The solution set in $\mathbb{R}$ of the equation : $x^2 + 9 = 0$ is .....

(3) $\mathbb{R} - \mathbb{Q}$ = ...

(4) The cube whose volume is 8 cm^3 , then the sum of the lengths of its edges = ... cm.

(5) The two integers which include the number $\sqrt{12}$ between them are ..... and .....

(6) If $\sqrt[3]{x} = -5$, then x = ...

---

2 Choose the correct answer from the given ones :

(1) $\sqrt[3]{(-8)^2}$ = ...

(a) 2 (b) – 2 (c) 4 (d) – 4

(2) $\mathbb{R}_+$ = ...

(a) $\{x : x \in \mathbb{R} , x < 0\}$ (b) $\{x : x \in \mathbb{R} , x \geq 1\}$

(c) $\{x : x \in \mathbb{R} , x > 0\}$ (d) $\{x : x \in \mathbb{R} , x \geq 0\}$

(3) $\sqrt[3]{5}$ ..... $\sqrt{3}$

(a) < (b) > (c) = (d) ≥

(4) The irrational number which is included between 2 and 3 is .....

(a) $\sqrt{10}$ (b) $\sqrt{7}$ (c) 2.5 (d) $\sqrt{3}$

(5) $(-5)^{zero}$ = ...

(a) zero (b) 1 (c) – 1 (d) – 5

(6) $\mathbb{R}$ = ...

(a) $\mathbb{Q} \cup \grave{\mathbb{Q}}$ (b) $\mathbb{Z}_+ \cup \mathbb{Z}_-$ (c) $\mathbb{R}_+ \cup \mathbb{R}_-$ (d) $\mathbb{N} \cup \mathbb{R}_-$

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3 **[a]** A square has an area of 8 cm^2. Find its side length then show if the side length is a rational number or an irrational number.

[b] Write three irrational positive numbers less than 3

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4 Solve each of the following equations to the nearest one decimal given that $x \in \mathbb{R}$:

(1) $\frac{1}{2} x^2 - 3 = zero$ (2) $(x - 3)^3 = 5$

Sheet 4

To	
Lesson	4
Unit	1

Answer the following questions :

1 Complete the following :

(1) $[-3\ ,4] \cap [2\ ,5] =$ .....

(2) $\mathbb{R}_+ =$ ..... (in the shape of an interval)

(3) $[2\ ,\infty[- [4\ ,\infty[=$ .....

(4) $\sqrt[3]{a^{12}} =$ .....

(5) If $a \in \mathbb{Z}_+$ and $\sqrt{3} < a < \sqrt{3} + 1$, then $a =$ .....

(6) The solution set in $\mathbb{R}$ of the equation : $x^3 - 5 = 0$ is .....

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2 Choose the correct answer from the given ones :

(1) $[-3\ ,2] - \{-3\ ,6\} =$ .....

(a) $]-3\ ,6[$ (b) $]-3\ ,2[$ (c) $]-3\ ,2]$ (d) $\varnothing$

(2) If $\sqrt{7} \in]x\ ,x+1[$ where $x \in \mathbb{Z}$, then $x =$ .....

(a) 1 (b) 2 (c) 3 (d) 4

(3) $\{x : x \leq 0\ ,x \in \mathbb{R}\} =$ .....

(a) $\mathbb{R}_+$ (b) $\mathbb{R}_-$ (c) $\mathbb{R}$ (d) $\mathbb{R}_- \cup \{0\}$

(4) $\mathbb{R}_+ \cap [-1\ ,3] =$ .....

(a) $]0\ ,3[$ (b) $]0\ ,3]$ (c) $[0\ ,3]$ (d) $[0\ ,3[$

(5) $\sqrt{4} - \sqrt[3]{-8} =$ .....

(a) zero (b) 4 (c) 2 (d) ± 2

(6) $\{x : x \in \mathbb{R}\ ,1 < x \leq 5\} =$ .....

(a) $]1\ ,5[$ (b) $[1\ ,5]$ (c) $[2\ ,5]$ (d) $]1\ ,5]$

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3 If $X =]-\infty\ ,1[$ and $Y = [-2\ ,4[$, find each of the following as an interval using the number line :

(1) $X \cup Y$ (2) $X \cap Y$

(3) $X - Y$ (4) $\grave{X}$

---

4 Find the solution set of each of the following equations in $\mathbb{R}$:

(1) $3x^2 + 125 = 221$ (2) $\frac{3}{4}x^2 - 2 = -11$

Sheet 5

To	
Lesson	5
Unit	1

Answer the following questions :

1 Complete the following :

(1) If $a = \sqrt{5}$ and $b = 2\sqrt{5}$, then $ab =$ .....

(2) $\mathbb{R}_+ \cup [-3 , 2[=$ .....

(3) If $x = \sqrt{5} + 2$ and $y = \sqrt{5} - 2$ then $(x + y)^2 =$ .....

(4) The additive inverse of the number $1 - \sqrt{3}$ is .....

(5) If $x = 2\sqrt[3]{5}$, then $x^3 =$ .....

(6) The solution set of the equation : $x^2 + 25 = 0$ in $\mathbb{R}$ is .....

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2 Choose the correct answer from the given ones :

(1) The multiplicative inverse of the number $\frac{\sqrt{3}}{6}$ is .....

(a) $\frac{\sqrt{6}}{3}$ (b) $2\sqrt{3}$ (c) $\frac{3}{\sqrt{6}}$ (d) $-\frac{\sqrt{3}}{6}$

(2) $2\sqrt{5} + 3\sqrt{5} =$ .....

(a) $5\sqrt{10}$ (b) $5\sqrt{5}$ (c) $6\sqrt{5}$ (d) 30

(3) $[2 , 5] - \{2 , 5\} =$ .....

(a) $[3 , 4]$ (b) $]2 , 5[$ (c) $\{2 , 5\}$ (d) $[2 , 5]$

(4) If $x^3 + 9 = 1$ where $x \in \mathbb{R}$, then $x =$ .....

(a) -8 (b) -2 (c) 2 (d) 8

(5) If $x = \sqrt{3} + 2$, then $x^2 =$ .....

(a) 5 (b) 7 (c) $7 + 2\sqrt{3}$ (d) $7 + 4\sqrt{3}$

(6) If $x^2 - y^2 = 60$, $x + y = 5\sqrt{6}$, then $= x - y =$ .....

(a) $\sqrt{6}$ (b) $2\sqrt{6}$ (c) $3\sqrt{6}$ (d) $4\sqrt{6}$

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3 [a] Determine on the number line the point which represents the number : $-\sqrt{7}$

[b] If $x = -\sqrt{3}$ and $y = 2\sqrt{3} - 3$, find the value of each of :

(1) $x + y$ (2) $x\,y$ (3) $\frac{y}{x}$

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4 If $X = [-1 , 5[$, $Y =]1 , 7[$, find each of the follwoing on an interval using the number line :

(1) $X \cap Y$ (2) $X \cup Y$ (3) $X - Y$

Sheet 6

To	
Lesson	6
Unit	1

Answer the following questions :

1 Complete the following :

(1) $[-2\ ,3[\cap [0\ ,5[=$ .....

(2) $\sqrt{8}-\sqrt{2} =$ .....

(3) If $x = 2\sqrt{3}$ and $y = \sqrt{12}$, then $\frac{x}{y} =$ .....

(4) $\{-1\ ,0\ ,1\} \cap]-1\ ,1[=$ .....

(5) The multiplicative inverse of the number $\sqrt{5}$ is .....

(6) $\sqrt[3]{8}+\sqrt[3]{-8} =$ .....

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2 Choose the correct answer from the given ones :

(1) $\left(\sqrt{8}+\sqrt{2}\right)^2 =$ .....

(a) $\sqrt{10}$ (b) 10 (c) 18 (d) $\sqrt{18}$

(2) $]-\infty\ ,3] \cup [2\ ,\infty[=$ .....

(a) $[2\ ,3]$ (b) $]2\ ,3[$ (c) $\{2\ ,3\}$ (d) $\mathbb{R}$

(3) $\left(2-\sqrt{5}\right) \in$ .....

(a) $\mathbb{R}_+$ (b) $\mathbb{R}_-$ (c) $\mathbb{Q}$ (d) $\mathbb{Z}_-$

(4) Which of the following is an irrational number lying between 2 and 3 ?

(a) 2.5 (b) $\sqrt{2}$ (c) $\sqrt[3]{7}$ (d) $\sqrt{5}$

(5) $\frac{1}{2}\sqrt{20}-\sqrt{5} =$ .....

(a) $\frac{1}{2}\sqrt{15}$ (b) $\sqrt{5}$ (c) zero (d) 1

(6) If π is the ratio between the circumference of the circle and its diameter length , then $\pi \in$ .....

(a) $\mathbb{N}$ (b) $\mathbb{Z}$ (c) $\mathbb{Q}$ (d) $\grave{\mathbb{Q}}$

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3 If $x = \frac{\sqrt{50}-\sqrt{18}}{2}$ and $y = 2-\sqrt{2}$, then find in the simplest form each of :

(1) $x + y$ (2) $x\,y$

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4 [a] Put in the simplest form : $\sqrt{75}-2\sqrt{27}+3\sqrt{\frac{1}{3}}$

[b] Find the solution set of each of the following equations in $\mathbb{R}$:

(1) $2x^2-6=4$ (2) $\frac{1}{6}x^2+6=6\frac{1}{2}$

Sheet 7

To	
Lesson	7
Unit	1

Answer the following questions :

1 Complete the following :

(1) The multiplicative inverse of the number $(\sqrt{3}+\sqrt{2})$ in the simplest form is .....

(2) The rectangle whose dimensions are $(\sqrt{3}+1)$ cm. and $(\sqrt{3}-1)$ cm. has an area = ... cm^2.

(3) $\frac{\sqrt{6}}{\sqrt{2}} - \frac{3}{\sqrt{3}} =$ .....

(4) The solution set in $\mathbb{R}$ of the equation : $\frac{1}{2}x^3 = 7$ is .....

(5) $[1,5] - \{1,5\} =$ ..... | (6) $\sqrt{7}+\sqrt{7} = \sqrt{.....}$

---

2 Choose the correct answer from the given ones :

(1) $\{x : 2 < x \leq 5 , x \in \mathbb{R}\} =$ .....

(a) $]2,5]$ (b) $[2,5]$ (c) $]2,5[$ (d) $[2,5[$

(2) $\frac{\sqrt{63}}{\sqrt{7}} =$ .....

(a) 3 (b) $\sqrt{3}$ (c) 9 (d) ± 3

(3) $\sqrt{(-7)^2} + \sqrt[3]{(-7)^3} =$ .....

(a) zero (b) 14 (c) -14 (d) $7\sqrt{7}$

(4) The set of the real numbers $\mathbb{R} =$ .....

(a) $\mathbb{R}_+ \cup \mathbb{R}_-$ (b) $\mathbb{Q} \cap \grave{\mathbb{Q}}$ (c) $]-\infty,\infty[$ (d) $\mathbb{R}_+ \cup \{0\}$

(5) The additive inverse of the number $-\frac{10}{\sqrt{2}}$ is .....

(a) $2\sqrt{5}$ (b) $5\sqrt{2}$ (c) $-\frac{\sqrt{2}}{10}$ (d) $\frac{\sqrt{2}}{10}$

(6) The solution set of the equation : $x^2 + 3 = 0$ in $\mathbb{R}$ is .....

(a) $\varnothing$ (b) $\{-\sqrt{3}\}$ (c) $\{\sqrt{3}\}$ (d) $\{\sqrt{3},-\sqrt{3}\}$

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3 If $x = \sqrt{5}+\sqrt{3}$ and $y = \frac{2}{\sqrt{5}+\sqrt{3}}$,

find the value of the expression : $x^2 - 2xy + y^2$

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4 [a] Put in the simplest form : $\sqrt{32} - \sqrt{72} + 6\sqrt{\frac{1}{2}}$

[b] Find in the shape of an interval using the number line : $]-\infty,1[\cup]2,\infty[$

Sheet 8

To	
Lesson	8
Unit	1

Answer the following questions :

1 Complete the following :

(1) The conjugate of the number $\frac{2\sqrt{5}-3\sqrt{2}}{\sqrt{2}}$ is .....

(2) $[0\ ,5]-[0\ ,3]=$ .....

(3) $\sqrt[3]{54}-\sqrt[3]{2}=$ .....

(4) If $x=\sqrt[3]{2}+1$ and $y=\sqrt[3]{2}-1$, then $(x+y)^3=$ .....

(5) $2\sqrt{\frac{1}{2}}-\sqrt{2}=$ .....

(6) The number $-\sqrt{11}$ is included between the two consecutive integers ..... and .....

---

2 Choose the correct answer from the given ones :

(1) If $X=\ ]-\infty\ ,0[$, then $\grave{X}=$ .....

(a) $\mathbb{R}_+$ (b) $[0\ ,\infty[$ (c) $]-\infty\ ,0]$ (d) $\mathbb{R}_-$

(2) The multiplicative inverse of the number $\sqrt{\frac{3}{2}}$ is .....

(a) $\frac{2}{3}\sqrt{2}$ (b) $\frac{3\sqrt{2}}{2}$ (c) $\frac{\sqrt{6}}{3}$ (d) $-\sqrt{\frac{3}{2}}$

(3) The irrational number in the following numbers is .....

(a) $\sqrt{\frac{1}{4}}$ (b) $\sqrt[3]{8}$ (c) $\sqrt{\frac{4}{9}}$ (d) $2\sqrt{2}$

(4) $\frac{\sqrt[3]{24}}{\sqrt[3]{3}}=$ .....

(a) $2\sqrt[3]{2}$ (b) 8 (c) 3 (d) 2

(5) $]-1\ ,3]\cap[-3\ ,-1]=$ .....

(a) $\varnothing$ (b) $\{-3\}$ (c) $\{-1\}$ (d) $\{3\}$

(6) If $x=\sqrt{3}+\sqrt{2}$ and $x\,y=1$, then $y=$ .....

(a) $\sqrt{2}-\sqrt{3}$ (b) $\sqrt{3}+\sqrt{2}$ (c) $\sqrt{3}-\sqrt{2}$ (d) 1

---

3 [a] If $x=2+\sqrt[3]{4}$ and $y=2-\sqrt[3]{4}$, find the value of : $\left(\frac{x-y}{x+y}\right)^3$

[b] Put in the simplest form : $\sqrt{18}-\sqrt[3]{72}-\sqrt{8}+\sqrt[3]{9}$

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4 If $x=\frac{1}{\sqrt{5}-2}$ and $y=\frac{20}{\sqrt{5}}$, find the value of : x^2-y

Sheet 9

To	
Lesson	9
Unit	1

Answer the following questions :

1 Complete the following :

(1) The cube whose volume = 8 cm^3 has a lateral area = ... cm^2

(2) The sphere whose volume = 36 π cm^3 has a radius length = ... cm.

(3) $\mathbb{R} - \mathbb{R}_+$ = ... (4) $\sqrt[3]{16} - \sqrt[3]{2}$ = ...

(5) If $x = \frac{1}{\sqrt{8} - \sqrt{5}}$, $x\,y = \frac{1}{3}$, then y = ...

(6) The S.S. of the equation $x^3 + 9 = 0$ in $\mathbb{R}$ is .....

---

2 Choose the correct answer from the given ones :

(1) The circle whose radius length = $\sqrt{14}$ cm. has an area = ... cm^2

(a) 14π (b) $2\sqrt{14}\,\pi$ (c) 14 (d) $2\sqrt{14}$

(2) $]2 , 4[\cup \{2 , 4\}$ = ...

(a) $\varnothing$ (b) $\{2 , 4\}$ (c) $[2 , 4]$ (d) $]2 , 4[$

(3) The right circular cylinder whose base radius length = 3 cm. and its height = 5 cm. its volume = ... cm^3

(a) 15π (b) 75π (c) 45π (d) $\frac{3}{5}\pi$

(4) If $-\sqrt{25} = \sqrt[3]{x}$, then x = ...

(a) -5 (b) -25 (c) -125 (d) 125

(5) The multiplicative inverse of $\frac{\sqrt{5}}{10}$ is .....

(a) $\frac{5}{\sqrt{10}}$ (b) $\frac{\sqrt{10}}{5}$ (c) $2\sqrt{5}$ (d) $-\frac{\sqrt{5}}{10}$

(6) The simplest form of the expression : $(\sqrt{3} - 1)^2 (\sqrt{3} + 1)^2$ is .....

(a) $2(\sqrt{3} - 1)$ (b) $(\sqrt{3} + 1)^2$ (c) 4 (d) 13

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3 The height of a right circular cylinder equals its radius length , and its volume = 7 π cm^3 Calculate the lateral area of the cylinder.

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4 **[a]** Find the volume of a sphere with radius length = 20 cm. and find its surface area. ($\pi = 3.141$)

[b] If $x = \sqrt{5} - \sqrt{3}$, $y = \frac{2}{\sqrt{5} - \sqrt{3}}$, **then find the value of :** $x^2 + 2xy + y^2$

Sheet 10

To	
Lesson	10
Unit	1

Answer the following questions :

1 Complete the following :

(1) The shape  represents the S.S. of the inequality ..... in $\mathbb{R}$

(2) The additive inverse of the number $1-\sqrt{2}$ is .....

(3) The S.S. in $\mathbb{R}$ of the equation : $\sqrt{2}\,x = 6$ is .....

(4) The S.S. in $\mathbb{R}$ of the inequality : $-x < 0$ is .....

(5) If $a \in \mathbb{Z}$ and $a < \sqrt{6} < a+1$, then $a =$ .....

(6) The circle whose surface area $= 49\,\pi$ cm^2 has a radius length = ... cm.

2 Choose the correct answer from the given ones :

(1) The S.S. in $\mathbb{R}$ of the inequality $-1 < -x \leq 1$ is .....

(a) $]-1\ ,\ 1]$ (b) $[-1\ ,\ 1]$ (c) $[-1\ ,\ 1[$ (d) $]-1\ ,\ 1[$

(2) The irrational number which is included between 2 and 3 is .....

(a) 2.1 (b) $\sqrt{3}$ (c) $\sqrt{2.5}$ (d) $\sqrt{7}$

(3) If $x = \sqrt{5}-\sqrt{3}$ and $y = \sqrt{5}+\sqrt{3}$, then $x\,y =$ .....

(a) 2 (b) -2 (c) $2\sqrt{5}$ (d) $2\sqrt{3}$

(4) If three quarters of the volume of a sphere is $8\,\pi$ cm^3 , then the length of its radius equals ..... cm.

(a) 64 (b) 8 (c) 4 (d) 2

(5) $\sqrt[3]{2}+\sqrt[3]{2} =$ .....

(a) $\sqrt[3]{4}$ (b) $\sqrt[3]{8}$ (c) $\sqrt[3]{16}$ (d) $\sqrt[3]{2}$

(6) $]-\infty\ ,\ 1] \cup [0\ ,\ \infty[=$ .....

(a) $[0\ ,\ 1]$ (b) $]0\ ,\ 1[$ (c) $\mathbb{R}$ (d) $\{0\ ,\ 1\}$

3 Find in $\mathbb{R}$ the S.S. of each of the following and represent it on the number line :

(1) $-1 < 1-2x \leq 5$ (2) $\sqrt{5}\,x + 1 = 6$

4 [a] Simplify to the simplest form : $2\sqrt{5}+9\sqrt{\frac{1}{3}}-\sqrt{27}-5\sqrt{\frac{1}{5}}$

[b] A cuboid has a lateral area of 480 cm^2 and its base is square-shaped with side length 10 cm. Calculate its height.

Sheet 11

To	
Lesson	1
Unit	2

Answer the following questions :

1 Complete the following :

(1) $\sqrt{9+16} = 3 +$ .....

(2) The cuboid whose base area $(\sqrt{7}+2)$ cm^2 and its height $(\sqrt{7}-2)$ cm. , then its volume ..... cm^3

(3) $\sqrt[3]{250} - \sqrt[3]{2} =$ .....

(4) $\sqrt{50} - \sqrt{18} - \sqrt{2} =$ .....

(5) The relation : $y = 0$ is represented by the ..... -axis.

(6) If the ordered pair (1 , 3) satisfies the relation : $y = 3x + c$, then $c =$ .....

---

2 Choose the correct answer from the given ones :

(1) $-\sqrt{9} = \sqrt[3]{k}$, then $k =$ .....

(a) 3 (b) -3 (c) 27 (d) -27

(2) The multiplicative inverse of the number $\frac{\sqrt{2}}{10}$ is .....

(a) $5\sqrt{2}$ (b) $2\sqrt{5}$ (c) $-\frac{\sqrt{2}}{10}$ (d) $\frac{\sqrt{10}}{5}$

(3) $[2 , 5[\cap \{2 , 5\} =$ .....

(a) $\varnothing$ (b) $\{2\}$ (c) $\{5\}$ (d) $\{2 , 5\}$

(4) The ordered pair that satisfies the relation : $3x - y = 1$ is .....

(a) (0 , 5) (b) (– 1 , 2) (c) (1 , 2) (d) (2 , 1)

(5) If $x \in \mathbb{Z}$, $x < \sqrt[3]{9} < x + 1$, then $x =$ .....

(a) 1 (b) – 1 (c) 2 (d) – 2

(6) If (2 k , 3 k) satisfies the relation : $x + y = 15$, then $k =$ .....

(a) 5 (b) 3 (c) – 5 (d) – 3

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3 [a] Find three ordered pairs satisfying the relation :

$2x - 3y = 6$, then represent it graphically.

[b] If the straight line : $y - 3x = a$ intersects the x-axis at the point (1 , b) , then find the value of : a and b

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4 [a] Find in $\mathbb{R}$ the solution set of the equation :

$\sqrt{3}x - 1 = 5$, then represent the solution on the number line.

[b] A right circular cylinder , whose height equals the radius length of its base and its volume equals 27 π cm^3 Calculate its lateral area.

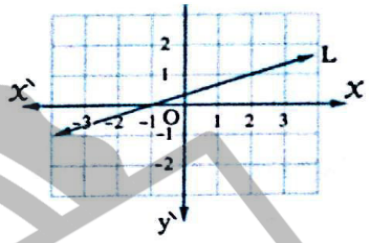
Sheet 12

To	
Lesson	2
Unit	2

1 Complete the following :

(1) The conjugate of the number $\frac{2}{\sqrt{5}+\sqrt{3}}$ is .....

(2) The slope of the straight line L in the opposite graph is .....



(3) The slope of any straight line parallels y-axis is .....

(4) A cube whose volume 64 cm^3 , then the length of its edge = ... cm.

(5) If the slope of the straight line passes through the two points (1 , c) and (3 , 5) equals $\frac{3}{2}$, then c = ...

(6) $]2 , 5[\cup \{2 , 3\}$ = ...

---

2 Choose the correct answer from the given ones :

(1) The irrational number included between the two number 3 , 4 is .....

(a) $\sqrt{5}$ (b) $\sqrt{10}$ (c) $\sqrt{16}$ (d) $\sqrt{9}$

(2) The multilicative inverse of the number $\frac{\sqrt{3}}{3}$ is .....

(a) $\frac{-\sqrt{3}}{3}$ (b) 2 (c) $\sqrt{3}$ (d) $3\sqrt{3}$

(3) The slope of the straight line $\overleftrightarrow{AB}$ where A (2 , 3) and B (0 , 4) is .....

(a) 1 (b) 2 (c) $-\frac{1}{2}$ (d) undefined

(4) The ordered pair (2 , 5) satisfies the relation .....

(a) $y = 3x + 1$ (b) $y = 3x$

(c) $y = 3x - 1$ (d) $y = x - 3$

(5) The solution set of the equation : $x^2 + 9 = 0$ in $\mathbb{R}$ is .....

(a) $\{3 , -3\}$ (b) $\{3\}$ (c) $\{-9\}$ (d) $\varnothing$

(6) $\sqrt{3} + \sqrt{3}$ = ...

(a) 3 (b) $\sqrt{6}$ (c) $2\sqrt{6}$ (d) $\sqrt{12}$

---

3 [a] Put in the simplest form : $\sqrt{18} + \sqrt{8} - \sqrt{50}$

[b] If X = [– 2 , 3] and Y = [1 , 5] , find using the number line each of :

(1) $X \cup Y$ (2) $X \cap Y$

---

4 [a] Represent the straight line that represents the relation : $2x + y = 4$, If this line intersects the x-axis at the point A and intersects the y-axis at the point B , then find the area of Δ AOB , where O is the origin point

[b] Prove that :

The points A , B and C are collinear where A (1 , 1) , B (– 5 , – 11) and C (4 , 7)

Sheet 13

To	
Lesson	3
Unit	2

Answer the following questions :

1 Complete the following :

(1) If the ordered pair (5 , 2) satisfies the relation $y = 2x - b$, then b = ...

(2) The slope of the straight line passes through the two points (3 , 4) and (3 , – 5) is .....

(3) $\sqrt[3]{\frac{3}{4}} \div \sqrt[3]{\frac{2}{9}}$ = ...

(4) A sphere whose volume 36π cm^3 , then its radius length is ..... cm.

(5) The S.S. of the inequality : $-x <$ zero in $\mathbb{R}$ is .....

(6) $\sqrt{25} + \sqrt[3]{-64}$ = ...

2 Choose the correct answer from the given ones :

(1) The square whose side length $\sqrt{5}$ cm. , its area = ... cm^2

(a) $4\sqrt{5}$ (b) 25 (c) 5 (d) 10

(2) The slope of the straight line parallels the y-axis is .....

(a) positive. (b) negative. (c) zero. (d) undefined.

(3) A cube with face perimeter 12 cm. , then its lateral area = ... cm^2

(a) 144 (b) 64 (c) 36 (d) 54

(4) $[1 , 9] - \{1 , 9\}$ = ...

(a) $\varnothing$ (b) {zero} (c) (0 , 0) (d) $]1 , 9[$

(5) $(\sqrt{3} + \sqrt{2})(\sqrt{3} - \sqrt{2})$ = ...

(a) 1 (b) 5 (c) $2\sqrt{3}$ (d) $2\sqrt{2}$

(6) The multiplicative inverse of the number $\frac{\sqrt{3}}{6}$ is .....

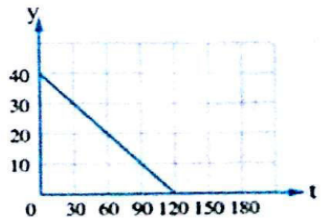
(a) $-\frac{6}{\sqrt{3}}$ (b) $2\sqrt{3}$ (c) $-2\sqrt{6}$ (d) $\frac{\sqrt{3}}{6}$

3 [a] If $a = \sqrt{3} + \sqrt{2}$, $b = \sqrt{3} - \sqrt{2}$, then **find the value of :** $a^2 - ab + b^2$

[b] **Represent graphically the straight line that represent the relation :** $2x - y = 3$

4 [a] A right cylinder whose volume 3080 cm^3 , and its height 20 cm. , find the diameter length of its base. $(\pi = \frac{22}{7})$

[b] Ahmed filled the tank of his car by fuel the opposite graph represent the relation between the time (t) in minutes and the amount of remained fuel in the tank (y) in litre , from the graph :



First : Find : (1) What is the greatest capacity of the tank.

(2) What is the average of the fuel consumption per minutes.

Second : When the tank get empty ?

Sheet 14

To	
Lesson	1
Unit	3

Answer the following questions :

1 Complete the following :

(1) $]-2\ ,\ 1[\ \cap\ [-2\ ,\ 1] =$ .....

(2) The S.S. of the equation $x^2 - 5 = 0$ in $\mathbb{R}$ is .....

(3) In the relation : $x + 5y = 9$ If $y = 0$, then $x =$ .....

(4) The S.S. of the inequality $1 - x \leq 1$ in $\mathbb{R}$ is .....

(5) The cuboid whose dimensions are $2\sqrt{5}$, $\sqrt{5}$ and 3 cm. has a volume = ... cm^3

(6) $\sqrt[3]{16} - \sqrt[3]{2}$ = ...

---

2 Choose the correct answer from the given ones :

(1) If the area of the six faces of a cube is 54 cm^2 , then its volume = ... cm^3

(a) 54 (b) 44 (c) 72 (d) 27

(2) $\sqrt{3} + \sqrt{3}$ = ...

(a) 3 (b) $\sqrt{6}$ (c) $2\sqrt{6}$ (d) $\sqrt{12}$

(3) $\mathbb{R}_+ - \mathbb{R}_-$ = ...

(a) $\mathbb{R}$ (b) $\varnothing$ (c) $\mathbb{R}_+$ (d) $\{0\}$

(4) The S.S. of the equation : $\sqrt{2}\,x - 1 = 3$ in $\mathbb{R}$ is .....

(a) $\{2\}$ (b) $\{\sqrt{2}\}$ (c) $\{2\sqrt{2}\}$ (d) $\{4\sqrt{2}\}$

(5) If $x = \sqrt{3} + 2$, $y = \sqrt{3} - 2$, then $(x\,y\ ,\ x + y)$ = ...

(a) $(1\ ,\ 2\sqrt{3})$ (b) $(-1\ ,\ 2\sqrt{3})$ (c) $(5\ ,\ 2\sqrt{3})$ (d) (5 , 9)

(6) If (– 1 , 5) satisfies the relation : $3x + k\,y = 7$, then k = ...

(a) 2 (b) – 2 (c) 1 (d) 10

---

3 [a] Find four ordered pairs satisfying the relation : $x - y = 3$

[b] Simplify : $\sqrt{40} - 5\sqrt{\frac{2}{5}} + 10\sqrt{\frac{5}{2}}$

---

4 [a] If $x = \frac{6}{\sqrt{3}}$, $y = \frac{1}{\sqrt{3} - 1}$ **, find the value of :** $\left(y - \frac{1}{4}\,x\right)^2$

[b] The following table shows the marks obtained by 30 students in an examination :

5	9	11	4	9	9	16	7	8	12	2	10	7	12	5
8	15	13	13	9	7	14	19	3	11	14	3	12	13	17

Form the frequency table to these data.

Sheet 15

To	
Lesson	2
Unit	3

Answer the following questions :

1 Complete the following :

(1) If $\sqrt[3]{x} = -2$, then $x =$ .....

(2) The cube whose the sum of its edge lengths is 36 cm. , then its total area = ... cm^2

(3) $[-1 , 4] -]-1 , 4[=$ .....

(4) If $x = \sqrt[3]{3} + 5$ and $y = \sqrt[3]{3} - 5$ then $(x + y)^3 =$ .....

(5) $\sqrt{5} , \sqrt{20} , \sqrt{45} , \sqrt{80}$, ... in the same pattern.

(6) The slope of the straight line perpendicular to the x-axis is .....

2 Choose the correct answer from the given ones :

(1) If $x^3 + 9 = 1$, where $x \in \mathbb{R}$, then $x =$ .....

(a) -8 (b) -2 (c) 2 (d) 8

(2) The slope of the straight line passes through A (2 , 3) and B (0 , 1) is .....

(a) 2 (b) -2 (c) 1 (d) -1

(3) $\sqrt[3]{-64} + \sqrt{16} =$ .....

(a) zero (b) 8 (c) -8 (d) ± 8

(4) If the volume of a sphere = $\frac{9}{16} \pi$ cm^3 , then its diameter length = ... cm.

(a) 3 (b) $\frac{4}{3}$ (c) $\frac{3}{2}$ (d) $\frac{1}{3}$

(5) $\sqrt[3]{54} + \sqrt[3]{-2} =$ .....

(a) $\sqrt[3]{52}$ (b) $\sqrt[3]{2}$ (c) $2\sqrt[3]{2}$ (d) $4\sqrt[3]{2}$

(6) $1 + \sqrt{2}$ ..... $\sqrt{3}$

(a) > (b) < (c) = (d) $\leq$

3 **[a]** If $x = \frac{4}{\sqrt{7} - \sqrt{3}}$, $y^{-1} = \frac{1}{\sqrt{7} - \sqrt{3}}$, then prove that x and y are two conjugate , then find the value of : $x^2 y^2$

[b] The volume of a sphere is 562.5 π cm^3. Find its surface area in terms of π

4 The following table shows the frequency distribution of wages of 100 workers weekly :

Sets	50 –	60 –	70 –	80 –	90 –	Total
Frequency	5	15	30	40	10	100

(1) Find the number of workers whose wages are less than 70 pounds weekly.

(2) Graph the ascending cummulative frequency curve.

Sheet 16

To	
Lesson	3
Unit	3

Answer the following questions :

1 Complete the following :

(1) The set whose lower limit = 3 and its upper limit = 7 , its centre = ...

(2) If the volume of a sphere is $\frac{32}{3}\pi$ cm^3. , then its radius length = ... cm.

(3) $[4 , \infty[-]-4 , 5[$ = ...

(4) The S.S. in $\mathbb{R}$ of the equation : $x + \sqrt{5} = \sqrt{20}$ is .....

(5) If $(k , -k)$ satisfies the relation : $2x + y = 3$, then k = ...

(6) If the arithmetic mean of a frequency distribution is 12.3 and the sum of all frequences is 100 , then the sum of the products of each frequence and the centre of its set = ...

2 Choose the correct answer from the given ones :

(1) If $x = 2 + \sqrt{5}$ and y is the conjugate number of x , then $(x - y)^2$ = ...

(a) $2\sqrt{8}$ (b) 20 (c) $4\sqrt{5}$ (d) 10

(2) If the mean of the values : 27 , 8 , 16 , 24 , 6 and k is 14 , then k = ...

(a) 3 (b) 6 (c) 27 (d) 84

(3) The S.S. of the inequality : $-x > 3$ in $\mathbb{R}$ is .....

(a) $\{-3\}$ (b) $]3 , \infty[$ (c) $]-\infty , 3[$ (d) $]-\infty , -3[$

(4) $[-3 , 4] - \{-3 , 5\}$ = ...

(a) $]-3 , 4[$ (b) $]-3 , 4]$ (c) $]-3 , 5[$ (d) $[-3 , 5]$

(5) $\mathbb{R}$ = ...

(a) $\mathbb{Q} \cup \mathbb{Q}'$ (b) $\mathbb{Q} \cap \mathbb{Q}'$ (c) $]-\infty , 0]$ (d) $[0 , \infty[$

(6) If $x \in \mathbb{Z}$ and $x < \sqrt[3]{7} < x + 1$, then x = ...

(a) 1 (b) 2 (c) 3 (d) zero

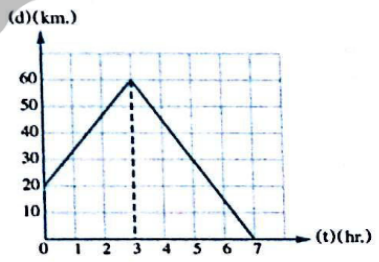
3 [a] If $x = \sqrt{7} + \sqrt{5}$ and $y = \frac{2}{x}$, find the value of the expression : $\frac{x + y}{xy}$ in its simplest form.

[b] The opposite graph represents the distance (d) in km. which covered by a bicycle during the time t in hours.

(1) Find the regular velocity of the bicycle during the first 3 hours.

(2) Find the regular velocity of the bicycle during the next four hours.

(3) Calculate the total distance that covered by the bicycle.



4 The following table shows the frequency distribution of extra wages weekly for 100 workers in a factory :

extra wages in pounds	20 –	30 –	40 –	50 –	60 –	70 –
number of workers	10	14	k	k + 4	20	8

(1) Calculate the value of k. (2) Find the arithmetic mean of this distribution.

Sheet 17

To	
Lesson	4
Unit	3

Answer the following questions :

1 Complete the following :

(1) $\sqrt{3} \times \sqrt{6} = 3 \times$ .....

(2) The point of intersection of the ascending and descending cummulative frequency curves determines ..... of the set-axis

(3) The conjugate of the number $\frac{2}{\sqrt{5}-\sqrt{3}}$ in the simplest form is .....

(4) If a and b are two integers and $a < b$, then $\frac{1}{2}\sqrt{20}$ in the form of $a\sqrt{b}$ is .....

(5) The slope of the straight line passes through (5 , 0) and (5 , – 1) is .....

(6) $\sqrt[3]{4} + 2\sqrt[3]{\frac{1}{2}}$ = ...

---

2 Choose the correct answer from the given ones :

(1) If the order of the median of a frequency distribution is 50 , then the sum of all frequences = ...

(a) 50 (b) 25 (c) 100 (d) 5

(2) If the lower limit of a set is 3 and its centre is 7 , then its upper limit = ...

(a) 7 (b) 9 (c) 10 (d) 11

(3) The multiplicative inverse of the number : $\frac{\sqrt{5}}{5}$ is .....

(a) $-\frac{\sqrt{5}}{5}$ (b) 5 (c) $5\sqrt{5}$ (d) $\sqrt{5}$

(4) If the volume of a sphere = $32\sqrt{3}\,\pi$ cm^3 , then its radius length = ...

(a) $\sqrt{3}$ cm. (b) 3 cm. (c) $2\sqrt{3}$ cm. (d) 9 cm.

(5) The S.S. of the inequality : $x + 3 < 3$ in $\mathbb{R}$ is .....

(a) $]-\infty , 0[$ (b) $]-\infty , 0]$ (c) $[0 , \infty[$ (d) $]0 , \infty[$

(6) The ordered pair (– 1 , 5) satisfies the relation .....

(a) $2x + y = 4$ (b) $x - 4 = y$ (c) $2x + y = 3$ (d) $5x = y$

---

3 [a] If $x = \sqrt{3} + \sqrt{2}$ and $y = \sqrt{3} - \sqrt{2}$, find in the simplest form the value of $\frac{x}{y}$

[b] A metalic sphere with radius length 6 cm. is melted and converted into a right circular cylinder of radius length 6 cm. Calculate the height of the cylinder.

---

4 [a] **Simplify to the simplest form :** $\sqrt[3]{16} - \frac{1}{3}\sqrt[3]{54} + \sqrt[3]{-2}$

[b] **Using the ascending or descending cummulative frequency curve , find the median of the following frequency distribution.**

Sets	4 –	8 –	12 –	16 –	20 –	Total
Frequency	2	4	8	6	4	24

Sheet 18

To	
Lesson	5
Unit	3

Answer the following questions :

1 Complete the following :

(1) If the sum of all frequences of a frequency distribution is 100 and the sum of products of frequency and the centre of the corresponding sets is 350 , then the arithmetic mean = ...

(2) $[0 , 5] - [0 , 2]$ = ...

(3) The S.S. of the inequality : $3x < 2x - 1$ in $\mathbb{R}$ is .....

(4) The cube whose lateral area is 16 cm^2 has a volume = ... cm^3

(5) The slope of any straight line parallel to x-axis is .....

(6) The multiplicative inverse of the number $-\frac{\sqrt{5}}{10}$ is .....

2 Choose the correct answer from the given ones :

(1) $]-\infty , 1[\cup]1 , \infty[$ = ...

(a) $\mathbb{R}$ (b) $\{1\}$ (c) $\varnothing$ (d) $\mathbb{R} - \{1\}$

(2) $\sqrt[3]{3} + \sqrt[3]{3}$ = ...

(a) 3 (b) $\sqrt[3]{24}$ (c) $\sqrt[3]{12}$ (d) $\sqrt[3]{6}$

(3) A right circular cylinder has a volume of 160 π cm^3 and its height is 10 cm. then its base radius length equals ..... cm.

(a) 4 π (b) 8 (c) 16 (d) 4

(4) The irrational number which is included between 3 and 4 is .....

(a) $3\frac{1}{2}$ (b) $\sqrt{5}$ (c) $\sqrt{10}$ (d) $\sqrt{\frac{100}{9}}$

(5) If the mode of set of the values : 4 , 11 , 8 and 2^x is 4 , then x = ...

(a) 2 (b) 4 (c) 6 (d) 8

(6) The conjugate number of $\frac{2}{\sqrt{3}-1}$ is .....

(a) $\sqrt{3} - 1$ (b) $\sqrt{3} + 1$ (c) $\sqrt{3}$ (d) $-1 - \sqrt{3}$

3 [a] **Prove that :** the points (2 , – 3) , (4 , – 5) , (0 , – 1) are collinear.

[b] If $x = \frac{4}{3+\sqrt{5}}$, $y = 3 + \sqrt{5}$ **Prove that :** x and y are conjugate , then find : $(x + y)^2 - 35$

4 [a] **Simplify :** $\frac{\sqrt{3}}{\sqrt{5}-\sqrt{3}} + \frac{\sqrt{5}}{\sqrt{5}+\sqrt{3}}$

[b] **The following table shows the frequency distribution of marks of 100 pupils in an examination :**

Sets of marks	10 –	14 –	18 –	22 –	26 –	x –	34 –	Total
Number of pupils	2	10	3 k	7 k + 5	25	6	2	100

(1) Find the value of each of x and k (2) Find the mode using the histogram of this distribution.

Sheet 1

To	
Lesson	1
Unit	4

Answer the following questions :

1 Complete the following :

(1) The medians of the triangle intersect at .....

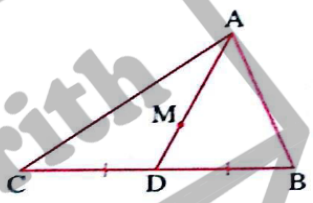
(2) The point of intersection of the medians of the triangle divides each of them by the ratio ..... : ..... from the vertex.

(3) **In the opposite figure :**

If $\overline{AD}$ is a median in ΔABC and $M \in \overline{AD}$

such that $MD : MA = 1 : 2$

Then M is the point of .....



(4) If $\overline{AD}$ is a median in ΔABC and M is the point of intersection of its medians , $AM = 6$ cm. , then $AD =$ ..... cm.

---

2 In the opposite figure :

$\overline{CD}$ and $\overline{BE}$ are two medians in ΔABC intersecting at M

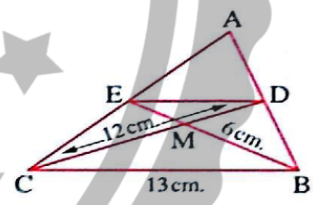
If $BM = 6$ cm. , $BC = 13$ cm. and $DC = 12$ cm.

Complete the following :

(1) $ME =$ ..... cm.

(2) $DM =$ ..... cm.

(3) $DE =$ ..... cm.



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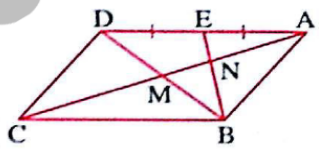
3 In the opposite figure :

ABCD is a parallelogram whose diagonals intersect at M

, E is the midpoint of $\overline{AD}$

, $\overline{BE} \cap \overline{AC} = \{N\}$

Prove that : $AN = \frac{1}{3} AC$



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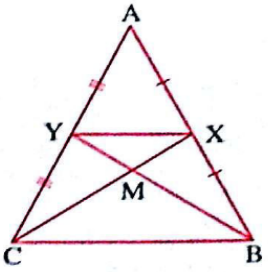
4 In the opposite figure :

ABC is a triangle , X is the midpoint of $\overline{AB}$

, Y is the midpoint of $\overline{AC}$, $\overline{XC} \cap \overline{YB} = \{M\}$

, $XM = 4$ cm. , $XY = 5$ cm. , $BY = 12$ cm.

Find : The perimeter of ΔMBC



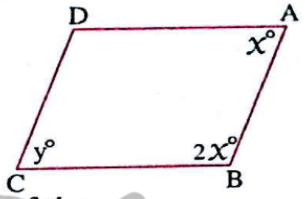
Sheet 2

To	
Lesson	2
Unit	4

Answer the following questions :

1 Complete the following :

(1) **In the opposite figure :**



If ABCD is a parallelogram , then y = ...°

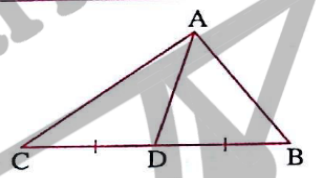
(2) The length of the median drawn from the vertex of the right angle of the right-angled triangle = ...

(3) The intersection point of the medians of the triangle divides each of them with the ratio ..... : ..... from the base.

(4) The length of the side opposite the angle whose measure = 30° in the right-angled triangle = ...

2 Choose the correct answer from the given ones :

(1) **In the opposite figure :**



If $\overline{AD}$ is a median in Δ ABC , then :

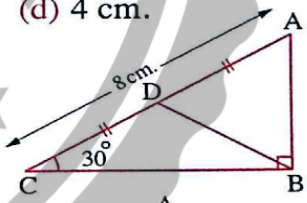
m (∠ BAC) = 90° if .....

(a) $AD = \frac{1}{2} AC$ (b) $AD = \frac{1}{2} AB$ (c) $BC = \frac{1}{2} AD$ (d) $AD = \frac{1}{2} BC$

(2) In Δ ABC : If $\overline{AD}$ is a median , M is the point of intersection of its medians and DM = 4 cm. , then AD = ...

(a) 8 cm. (b) 12 cm. (c) 16 cm. (d) 4 cm.

(3) **In the opposite figure :**

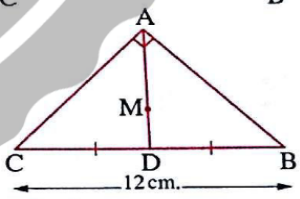


The perimeter of Δ ABD = ... cm.

(a) 16 (b) 8

(c) 24 (d) 12

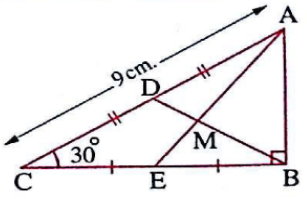
(4) **In the opposite figure :**



If Δ ABC in which : m (∠ BAC) = 90° , BC = 12 cm. and $\overline{AD}$ is a median , M is the point of intersection of its medians , then AM = ...

(a) 8 cm. (b) 4 cm. (c) 2 cm. (d) 6 cm.

3 In the opposite figure :



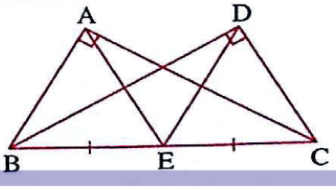
ABC is a triangle in which :

m (∠ B) = 90° , m (∠ C) = 30°

, AC = 9 cm. , $\overline{AE}$ and $\overline{BD}$ are two medians intersecting at M

Find : The lengths of each $\overline{BD}$, $\overline{BM}$ and $\overline{AB}$

4 In the opposite figure :



m (∠ BAC) = m (∠ BDC) = 90° ,

E is the midpoint of $\overline{BC}$

Prove that : AE = DE

Sheet 3

To	
Lesson	3
Unit	4

Answer the following questions :

1 Complete the following :

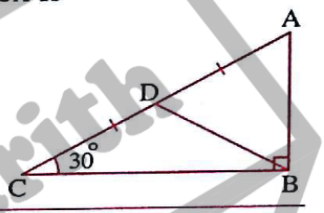
(1) The measure of any exterior angle of the equilateral triangle = ...

(2) ABC is an isosceles triangle in which AB = AC , m (∠ A) = 110° , then m (∠ B) = ...°

(3) If the length of the median which is drawn from a vertex of a triangle equals half the length of the side opposite this vertex , then the angle at this vertex is .....

(4) **In the opposite figure :**

ABC is a triangle in which m (∠ ABC) = 90° ,
m (∠ C) = 30° , $\overline{BD}$ is a median
, then m (∠ DBC) = ...°



2 Choose the correct answer from the given ones :

(1) In Δ ABC : If $\overline{AD}$ is a median , M is the point of intersection of its medians , then AM = ... AD

(a) $\frac{1}{2}$ (b) 2 (c) $\frac{2}{3}$ (d) $\frac{3}{2}$

(2) In the isosceles triangle , if the measure of one of the base angles = 50° , then the measure of the vertex angle = ...

(a) 50° (d) 100° (c) 80° (d) 90°

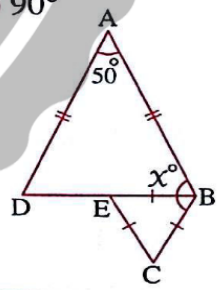
(3) If Δ ABC is right-angled at A and AB = AC , then m (∠ B) = ...

(a) 30° (b) 45° (c) 60° (d) 90°

(4) **In the opposite figure :**

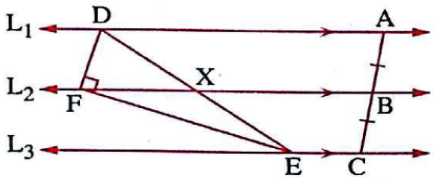
AB = AD , Δ BCE is an equilateral triangle
and m (∠ A) = 50° , then $\mathcal{X}$ = ...

(a) 60° (b) 110°
(c) 120° (d) 125°



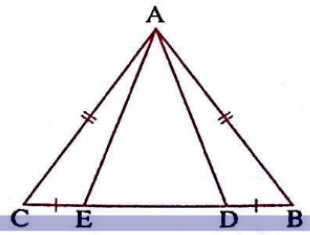
3 In the opposite figure :

L_1 // L_2 // L_3 , AB = BC ,
m (∠ DFE) = 90°
Prove that : FX = $\frac{1}{2}$ DE



4 In the opposite figure :

ABC is a triangle in which : AB = AC
, D ∈ $\overline{BC}$ and E ∈ $\overline{BC}$
such that : BD = EC
Prove that : AD = AE



Sheet 4

To	
Lesson	4
Unit	4

Answer the following questions :

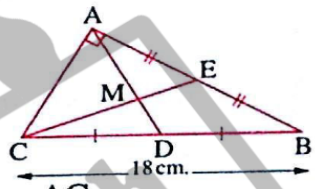
1 Complete the following :

(1) The isosceles triangle in which the measure of one of its angles = 60° is .....

(2) If ABC is a triangle in which : m (∠ B) = 50° and m (∠ C) = 80° , then BC = ...

(3) **In the opposite figure :**

If ABC is a triangle in which m (∠ BAC) = 90° , BC = 18 cm. $\overline{AD}$ and $\overline{CE}$ are two medians intersecting at M , then AM = ... cm.

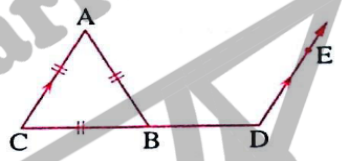


(4) In Δ ABC , if m (∠ A) = 30° , m (∠ B) = 90° , then : BC = ... AC

2 Choose the correct answer from the given ones :

(1) **In the opposite figure :**

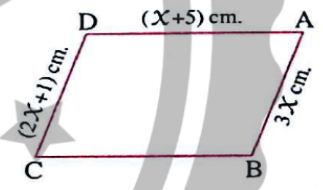
Δ ABC is an equilateral triangle and $\overline{DE}$ // $\overline{CA}$, then m (∠ D) = ...



(a) 100° (b) 60° (c) 120° (d) 150°

(2) **In the opposite figure :**

ABCD is a parallelogram , then its perimeter = ... cm.



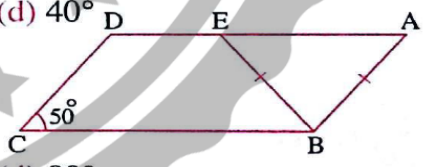
(a) 18 (b) 12 (c) 9 (d) 6

(3) An isosceles triangle , the measure of one of its base angles is 70° , then the measure of its vertex angle = ...

(a) 70° (b) 110° (c) 20° (d) 40°

(4) **In the opposite figure :**

ABCD is a parallelogram , BA = BE and m (∠ C) = 50° , then m (∠ ABE) = ...



(a) 50° (b) 60° (c) 70° (d) 80°

3 In the opposite figure :

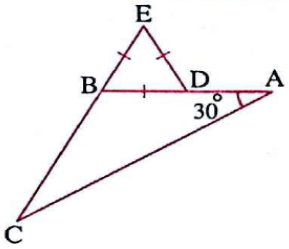
E ∈ $\overrightarrow{CB}$, D ∈ $\overline{AB}$,

ED = DB = EB

and m (∠ A) = 30°

Prove that :

ABC is an isosceles triangle.



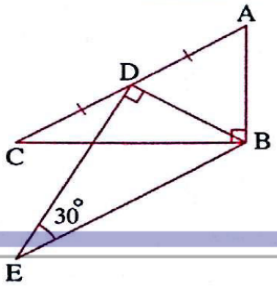
4 In the opposite figure :

m (∠ ABC) = m (∠ BDE) = 90°

, m (∠ E) = 30°

, D is the midpoint of $\overline{AC}$

Prove that : AC = BE



Sheet 5

To	
Lesson	5
Unit	4

Answer the following questions :

1 Complete the following :

(1) The bisector of the vertex angle of the isosceles triangle .....

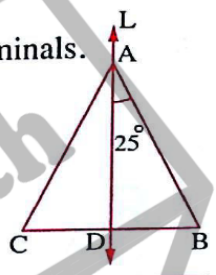
(2) If ABC is a triangle in which : m (∠ A) = 75° and m (∠ B) = 30° , then the number of its axes of symmetry = ...

(3) Any point on the axis of symmetry of a line segment is ..... from its terminals.

(4) **In the opposite figure :**

If the straight line L is the axis of symmetry of Δ ABC and m (∠ BAD) = 25°

then m (∠ C) = ...°



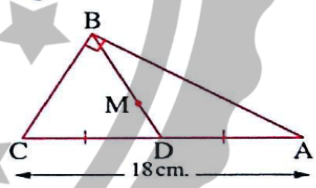
2 Choose the correct answer from the given ones :

(1) If $\overline{AD}$ is a median in Δ ABC , M is the point of intersection of its medians , then DM = ... AD

(a) 2 (b) $\frac{1}{2}$ (c) $\frac{2}{3}$ (d) $\frac{1}{3}$

(2) **In the opposite figure :**

ABC is a triangle in which : m (∠ ABC) = 90° , $\overline{BD}$ is a median , AC = 18 cm. , if M is the point of intersection of its medians , then DM = ... cm.



(a) 3 (b) 6 (c) 9 (d) 4.5

(3) If Δ ABC has one axis of symmetry and m (∠ ABC) = 120° , then m (∠ A) = ...

(a) 60° (b) 120° (c) 30° (d) 40°

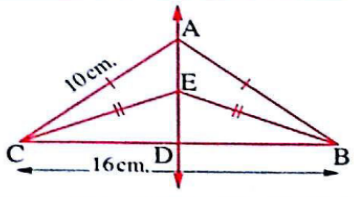
(4) If AX = AY , BX = BY where X and Y in two different sides from $\overline{AB}$, then : $\overleftrightarrow{XY}$ ..... $\overline{AB}$

(a) ⊥ (b) // (c) = (d) ≡

3 In the opposite figure :

ABC is a triangle in which : AB = AC = 10 cm. , BE = EC , BC = 16 cm. and $\overrightarrow{AE} \cap \overline{BC} = \{D\}$

Find : The length of $\overline{AD}$

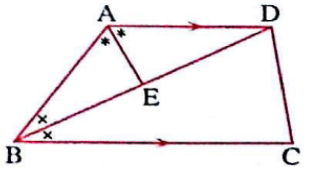


4 In the opposite figure :

ABCD is a quadrilateral in which :

$\overline{AD} // \overline{BC}$, $\overrightarrow{BD}$ bisects ∠ ABC , $\overrightarrow{AE}$ bisects ∠ BAD

Prove that : BE = ED



Sheet 6

To	
Lesson	1
Unit	5

Answer the following questions :

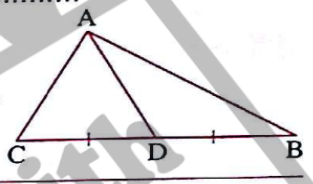
1 Complete the following :

(1) If the measure of an angle in the isosceles triangle = 100° , then the measure of one of the two other angles of the triangle = ...°

(2) The measure of any exterior angle of a triangle is greater than .....

(3) **In the opposite figure :**

If $\overline{AD}$ is a median in Δ ABC , then m (∠ BAC) = 90° if .....



(4) If $x > y$, $z < y$, then x ..... z

2 Choose the correct answer from the given ones :

(1) If $\overline{AD}$ is a median in Δ ABC , M is the point of intersection of its medians and AM = 6 cm. , then AD = ...

(a) 12 cm. (b) 6 cm. (c) 18 cm. (d) 9 cm.

(2) ABC is a right-angled triangle at B , m (∠ A) = 30° and BC = 4 cm. , then AC = ... cm.

(a) 4 (b) 8 (c) 2 (d) 12

(3) ABC is a triangle in which : AB = AC , then the exterior angle at C is .....

(a) an acute angle. (b) an obtuse angle. (c) right angle. (d) reflex angle.

(4) Δ ABC which is right-angled at B , m (∠ A) = 55° , then the number of its axes of symmetry is .....

(a) one. (b) two. (c) three. (d) zero.

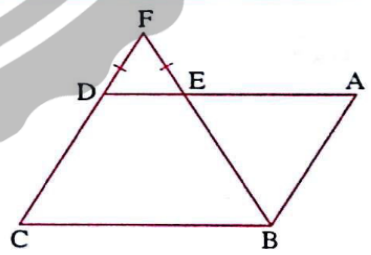
3 In the opposite figure :

ABCD is a parallelogram ,

$E \in \overline{AD}$, $\overrightarrow{BE} \cap \overrightarrow{CD} = \{F\}$

in which EF = DF

Prove that : Δ BAE is an isosceles triangle.

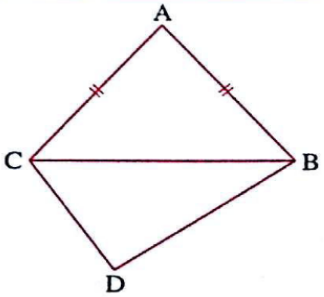


4 In the opposite figure :

AB = AC and m (∠ BCD) > m (∠ CBD)

Prove that :

m (∠ ACD) > m (∠ ABD)



Sheet 7

To	
Lesson	2
Unit	5

Answer the following questions :

1 Complete the following :

(1) In a triangle , if two sides have unequal lengths , the longer is opposite .....

(2) The perpendicular to a line segment from its midpoint is ..... to it.

(3) If ABC is a triangle in which : AB = 4 cm. , BC = 5 cm. and AC = 6 cm. , then :

m (∠ .....) > m (∠ .....) > m (∠ .....)

(4) In the isosceles triangle , if the measure of one of the two base angles is 50° , then the measure of the vertex angle = ...°

---

2 Choose the correct answer from the given ones :

(1) If $\overline{AD}$ is a median in Δ ABC , and M is the point of intersection of its medians and AM = 12 cm. , then AD = ...

(a) 8 cm. (b) 4 cm. (c) 18 cm. (d) 9 cm.

(2) In Δ XYZ , if XY < XZ , then .....

(a) m (∠ Y) ≤ m (∠ Z) (b) m (∠ Y) > m (∠ Z)

(c) m (∠ Y) = m (∠ Z) (d) m (∠ Z) > m (∠ Y)

(3) If the length of any side in a triangle = $\frac{1}{3}$ the perimeter of the triangle , then the number of axes of symmetry of the triangle = ...

(a) 1 (b) 2 (c) 3 (d) zero

(4) ABCD is a parallelogram in which m (∠ A) + m (∠ C) = 140° , then m (∠ B) = ...

(a) 70° (b) 40° (c) 110° (d) 220°

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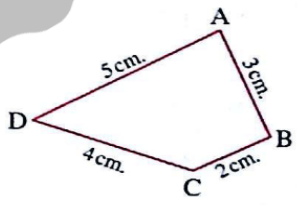
3 In the opposite figure :

ABCD is a quadrilateral in which AB = 3 cm.

, BC = 2 cm. , CD = 4 cm. and AD = 5 cm.

Prove that : m (∠ ABC) > m (∠ ADC)



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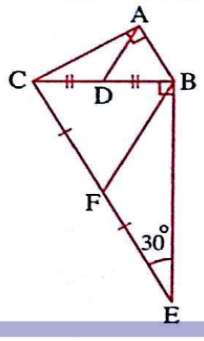
4 In the opposite figure :

m (∠ BAC) = m (∠ CBE) = 90°

, m (∠ BEC) = 30°

, D and F are the midpoints of $\overline{BC}$ and $\overline{CE}$ respectively.

Prove that : AD = $\frac{1}{2}$ BF



Sheet 8

To	
Lesson	3
Unit	5

Answer the following questions :

1 Complete the following :

(1) The longest side in the right-angled triangle is .....

(2) In Δ ABC : If m (∠ A) = 60° and m (∠ B) = 70° , then the shortest side is .....

(3) The bisector of the vertex angle of the isosceles triangle .....

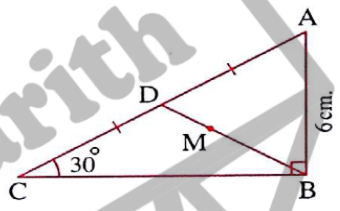
(4) **In the opposite figure :**

If m (∠ ABC) = 90° , m (∠ C) = 30°

, M is the point of intersection of the medians

of Δ ABC and AB = 6 cm.

, then MD = ... cm.



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2 Complete the following :

(1) In a triangle , if two angles are unequal in measure , then the greater angle in measure is .....

(2) In Δ ABC : If AB = AC and m (∠ A) = 2 m (∠ B) , then m (∠ C) = ... °

(3) In Δ ABC : If m (∠ A) = 67° , m (∠ B) = 33° , then AB > ..... > .....

(4) In Δ ABC : If AB < BC < AC , then the smallest angle in measure is .....

---

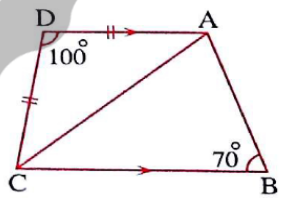
3 In the opposite figure :

$\overline{AD}$ // $\overline{BC}$, AD = DC ,

m (∠ B) = 70° and m (∠ D) = 100°

Prove that :

(1) AC > AB (2) Δ ABC is an isosceles triangle.



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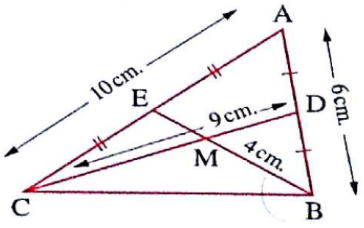
4 In the opposite figure :

AB = 6 cm. , AC = 10 cm.

, BM = 4 cm. , CD = 9 cm.

, D and E are the midpoints of $\overline{AB}$ and $\overline{AC}$ respectively

Find : The perimeter of the figure ADME



Sheet 9

To	
Lesson	4
Unit	5

Answer the following questions :

1 Complete the following :

(1) Δ ABC in which m ($\angle$ A) = 50° , m ($\angle$ B) = 60° , then the longest side is .....

(2) In the right-angled triangle , the length of the median drawn from the vertex of the right angle = ... the length of the hypotenuse.

(3) The number of axes of symmetry of the equilateral triangle = ...

(4) If the lengths of two sides in an isosceles triangle are 3 cm. and 7 cm. , then the length of the third side equals .....

2 Choose the correct answer from the given ones :

(1) In Δ ABC : If AB = 6 cm. and AC = 7 cm. then BC $\in$ .....

(a)]6 , 13] (b) [6 , 7] (c)] 1 , 13[(d) [1 , 7[

(2) An isosceles triangle in which the measure of the vertex angle is 100° , then the measure of one of the two base angles = ...

(a) 80° (b) 40° (c) 50° (d) 100°

(3) The point of intersection of the medians of the triangle divides each of them in the ratio of ..... from the vertex.

(a) 1 : 2 (b) 1 : 3 (c) 2 : 1 (d) 2 : 3

(4) The numbers that can be lengths of sides of a triangle are .....

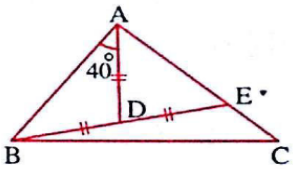
(a) 7 , 7 , 14 (b) 3 , 4 , 9 (c) 4 , 5 , 12 (d) 5 , 5 , 5

3 In the opposite figure :

AD = BD = ED , m ($\angle$ DAB) = 40°

Prove that :

(1) AD < AB (2) BC > AC



4 In the opposite figure :

ABC is a triangle in which X $\in \overline{AB}$, Y $\in \overline{AC}$, M $\in \overline{XY}$

Prove that : AB + AC > MB + MC